

## **I. AMENDMENTS TO THE CLAIMS**

This listing of the claims will replace all prior versions and listings.

### **LISTING OF CLAIMS:**

Claims 1-26 (canceled).

Claim 27 (new) A method of manipulating the metabolism of a cell, comprising:

- a) generating a bacterial cell comprising:
  - i) a first recombinant gene encoding pantothenate kinase (PanK);
  - ii) a second recombinant gene encoding pyruvate dehydrogenase (PDH), and
  - iii) a third recombinant gene encoding alcohol acetyl transferase (ATF);
- b) culturing said cell in a cell medium comprising panthenoic acid under conditions wherein said recombinant genes are expressed, thereby increasing CoA production relative to said bacterial cell without said recombinant genes.

Claim 28 (new) The method of claim 27, wherein the bacterial cell further comprises reduced activity of *ackA*, or *pta*, or both *ackA-pta*.

Claim 29 (new) The method of claim 27, where the *panK* gene is under the control of the *lac* promoter and the *atf2* gene is under the control of the *ptb* promoter.

Claim 30 (new) The method of claim 27, wherein said cell is cultured in a bioreactor, fermentor, chemostat, or shaker-flask culture.

Claim 31 (new) The method of claim 27, wherein increasing said CoA production increases production of isoamyl acetate.

Claim 32 (new) A method of increasing Coenzyme A (CoA) dependent metabolism comprising:

- a) generating a bacterial cell comprising:

- i) a combination of recombinant genes encoding alcohol pantothenate kinase (PanK) and pyruvate dehydrogenase (PDH) and alcohol acetyl transferase (ATF);
- ii) reduced activity of *ackA*, or *pta*, or both *ackA-pta*;

culturing said cell in a medium comprising panthenoic acid under conditions wherein said combination of recombinant genes is expressed, thereby increasing CoA production, and thereby increasing production of isoamyl alcohol.

Claim 33 (new) The method of claim 31, where the *panK* gene is under the control of the *lac* promoter and the *atf2* gene is under the control of the *ptb* promoter.